



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
|-----------------|-------------|----------------------|---------------------|

09/183,267 10/30/98 GUARNIERI

F SAR-12902

EXAMINER

HM12/0305

WILLIAM J BURKE
SARNOFF CORPORATION
C/O PATENT OPERATIONS
CN 5300
PRINCETON NJ 08543-5300

STU.S
ART UNIT

PAPER NUMBER

1631
DATE MAILED:

10
03/05/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/183,267

Applicant(s)

GUARNIERI, FRANK

Examiner

Stephen Siu

Art Unit

1631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

This is in response to Applicant's amendment received January 3, 2001 (paper number 9). — —

The rejection of claims 1-8 under 35 U.S.C. 112, second paragraph as cited in the Action mailed June 30, 2000 (paper number 7) is withdrawn in view of Applicant's amendments and arguments.

Drawings

Color photographs and color drawings are acceptable only for examination purposes unless a petition filed under 37 CFR 1.84(a)(2) or (b)(2) is granted permitting their use as formal drawings. In the event applicant wishes to use the drawings currently on file as formal drawings, a petition must be filed for acceptance of the photographs or color drawings as formal drawings. Any such petition must be accompanied by the appropriate fee as set forth in 37 CFR 1.17(i), three sets of drawings or photographs, as appropriate, and an amendment to the first paragraph of the brief description of the drawings section of the specification which states:

The file of this patent contains at least one drawing executed in color. Copies of this patent with color drawing(s) will be provided by the Patent and Trademark Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings have been satisfied.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

Art Unit: 1631

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 11, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Resat (Biophysical Journal, Vol.71, 9/96, pages 1179-1190, PTO-1449 reference AF).

Resat teaches a method of determining likely locations for solvating waters in a dCpG/proflavine crystal hydrate (i.e., "identifying binding sites on a macromolecule") using Monte Carlo simulation studies. Rezai determines the water molecule locations in protein and nucleic acid structures and compares with experimental results (abstract and page 1182, col.1, "Calculations"). The mobility of atoms are estimated from B factors (page 1179, col.1, lines 22-23). A plurality of configurations are derived with the unit cell containing 108 waters on average (i.e., "three or more"). Favorable solute-solvent interactions resulted in lower water solvation free energy in the dCpG/proflavine crystal hydrate (page 1183, col.1, lines 1-10). In one embodiment, local densities calculated on a grid are iteratively density-weight averaged with nearby sites. The averaging radius is set to a small value at the beginning and then increased in small increments until convergence is obtained (page 1183, col.1, "Analysis", paragraph 2, lines 7-11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Resat (Biophysical Journal, Vol.71, 9/96, pages 1179-1190, PTO-1449 reference AF) in view of Morgantini (J Am Chem Soc 1995, 117(22), 6057-63) or Calafat (J Am Chem Soc 1997, 119(16), 3656-3664) or Blasko (Journal of Organic Chemistry, 10/8/93, Vol.58, No.21, pages 5738-5747) or Siepmann (Molecular Physics 1993, Vol.79, no.3, 457-473) or Koone (Journal of Physical Chemistry, 16 NOV 1995, vol.99, No. 46, pages 16976-16981) or Gibson (Journal of Physical Chemistry, 16 MAR 1995, Vol.99, No.11, pages 3765-3773) or Brandmeier (Helv. Chim. Acta, 1994, 77(1), pages 70-85) or Johnson (Inst. Phys. Conf. Ser., 1991, 114 (Reson. Ioniz Spectrosc. 1990), 145-50) or Basson (J. Phys. D: Appl. Phys, 1988, 21(9), pages 1434-7) or Ranineri (Chemical Physics 183, 1994, 187-205) or Mokrosz (Journal of Heterocyclic Chemistry, JUL/AUG 1996, Vol.33, No.4, pages 1207-1210) or Duggan (Journal of Medicinal Chemistry, 27 SEP 1996, Vol.39, No.20, pages 4007-4016) or Clough (Macromolecules, 15 FEB 1993, Vol.26, No.4, pages 597-600) or Lunazzi (Journal of Organic Chemistry, 1997, 62/7 (2263-2266)) or Lee (Journal of the American Chemical Society, 1996, 118/3, 502-508).

Resat teaches a method of identifying binding sites on a macromolecule as described above.

Resat does not teach the organic fragment as being acetone, aldehyde, amide, ammonia, benzene, carboxylic acid, 1,4-diazine, ester, ether, formaldehyde, furan, imidazole, methane, methanol, phospho-acid, pyridine, pyrimidine, pyrrole, thiol, or thiophene.

Morgantini teaches the utility of applications of ammonia, amide, methane and ether to molecular dynamics and the analysis of binding in biomolecules. Calafat teaches the utility of applications of pyrimidine, imidazole and amide to molecular dynamics and the analysis of binding in biomolecules. Blasko teaches the utility of applications of pyrrole to molecular dynamics and the analysis of binding in biomolecules. Siepmann teaches the utility of applications of thiol to molecular dynamics and the analysis of binding in biomolecules. Koone teaches the utility of applications of acetone to molecular dynamics and the analysis of binding in biomolecules. Gibson teaches the utility of applications of benzene to molecular dynamics and the analysis of binding in biomolecules. Brandmeier teaches the utility of applications of carboxylic acid to molecular dynamics and the analysis of binding in biomolecules. Johnson teaches the utility of applications of 1,4-diazine to molecular dynamics and the analysis of binding in biomolecules. Basson teaches the utility of applications of esters and phospho-acids to molecular dynamics and the analysis of binding in biomolecules. Raineri teaches the utility of applications of formaldehyde to molecular dynamics and the analysis of binding in biomolecules. Mokrosz teaches the utility of applications of furan and pyrimidines to molecular dynamics and the analysis of binding in biomolecules. Duggan teaches the utility of applications of methanol to molecular dynamics and the analysis of binding in biomolecules. Clough teaches the utility of applications of pyridine to molecular dynamics and the analysis of binding in biomolecules. Lunazzi teaches the utility of applications of thiophene, aldehydes and furan to molecular dynamics and the analysis of binding in biomolecules. Lee teaches

Art Unit: 1631

the utility of applications of aldehydes to molecular dynamics and the analysis of binding in biomolecules.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the molecular dynamic studies with water as the organic fragment as per the teachings of Resat and to further perform the method with any of acetone, aldehyde, amide, ammonia, benzene, carboxylic acid, 1,4-diazine, ester, ether, formaldehyde, furan, imidazole, methane, methanol, phospho-acid, pyridine, pyrimidine, pyrrole, thiol, or thiophene as the organic fragment because teachings of Morgantini, Calafat, Blasko, Siepmann, Koone, Gibson, Brandmeier, Johnson, Basson, Raineri, Mokrosz, Duggan, Clough, Lunazzi, and/or Lee as cited above collectively demonstrate the utility of applying molecular dynamic studies to any of the compounds and analyzing binding to biomolecules. Thus, one of ordinary skill in the art would have been motivated to perform binding analysis with the compounds with a reasonable expectation of success.

Conclusion

No claims allowed.

Inquiries

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Stephen Siu, whose telephone number is (703) 308-7522. The Examiner can normally be reached from 7:00 a.m. to 3:30 p.m. on weekdays. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Michael Woodward, can be reached at (703) 308-4028. Papers related to this application may be submitted to Art Unit 1631 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see

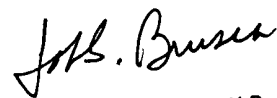
Application/Control Number: 09/183,267

Page 7

Art Unit: 1631

37 CFR 1.6(d)). NOTE: If applicant does submit a paper by FAX, the original copy should be retained by applicant or applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED, so as to avoid the processing of duplicate papers in the Office. The Fax number is (703) 308-0294. Please call the Examiner at (703) 308-7522 before the transmission to expedite delivery of the fax. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Stephen Siu



JOHN S. BRUSCA, PH.D
PRIMARY EXAMINER